

Appl. No. 10/814,393
Examiner: Ton, Minh Toan, Art Unit 2871
In response to the Office Action dated December 13, 2005

Date: March 13, 2006
Attorney Docket No. 10113991

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claim 1 (Currently amended): A color filter on array substrate, comprising:

 a substrate;
 an insulating layer formed on selected regions on the substrate, the insulating layer having a reflective top surface; and
 a color filter over the substrate, including over the insulating layer at the selected regions, wherein a thickness of the color filter at the selected regions is thinner than that at ~~at~~ beyond outside of the selected regions.

Claim 2 (Original): The color filter on array substrate according to claim 1, wherein the insulating layer includes a reflective layer having a reflective top surface.

Claim 3 (Original): The color filter on array substrate according to claim 1, wherein the insulating layer does not extend beyond the selected regions on the substrate, and the selected regions generally define reflective regions on the substrate and the regions outside the selected regions generally define transmissive regions on the substrate.

Claim 4 (Original): The color filter on array substrate according to claim 1, wherein the insulating layer extends beyond the selected regions on the substrate, and the selected regions generally define reflective regions on the substrate and the regions outside the selected regions generally define transmissive regions on the substrate

Claim 5 (Original): The color filter on array substrate according to claim 1, further comprising:
 a pixel electrode formed on the color filter.

Claim 6 (Currently amended): A transreflective liquid crystal display device, comprising:
 a color filter on an array substrate, comprising:
 a first substrate;

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an insulating layer formed on selected regions on the first substrate, the insulating layer having a reflective top surface; and

the color filter over the first substrate, including over the insulating layer at the selected regions, wherein a thickness of the color filter at the selected regions is thinner than that ~~at~~ beyond outside of the selected regions;

a liquid crystal element supported on the color filter on the array substrate; and

electrodes operatively coupled to the liquid crystal element.

Claim 7 (Original): The transreflective liquid crystal display device according to claim 6, wherein the electrodes comprise a pixel electrode and a common electrode.

Claim 8 (Original): The transreflective liquid crystal display device according to claim 6, further comprising:

a second substrate opposite the first substrate, wherein the first and second substrates sandwich therebetween the liquid crystal element, electrodes, the insulating layer and the color filter.

Claim 9 (Original): The transreflective liquid crystal display device according to claim 6, wherein the insulating layer includes a reflective layer having a reflective top surface.

Claim 10 (Original): The transreflective liquid crystal display device according to claim 6, wherein the insulating layer does not extend beyond the selected regions on the first substrate, and the selected regions generally define reflective regions on the first substrate and the regions outside the selected regions generally define transmissive regions on the first substrate.

Claim 11 (Original): The transreflective liquid crystal display device according to claim 6, wherein the insulating layer extends beyond the selected regions on the first substrate, and the selected regions generally define reflective regions on the first substrate and the regions outside the selected regions generally define transmissive regions on the first substrate.

Claim 12 (Currently amended): An electronic device, comprising:

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a liquid crystal display-device comprising a color filter on an array substrate, wherein the array substrate comprises:

a first substrate;

an insulating layer formed on selected regions on the first substrate, the insulating layer having a reflective top surface;

the color filter over the first substrate, including over the insulating layer at the selected regions, wherein a thickness of the color filter at the selected regions is thinner than that at-beyond outside of the selected regions;

a liquid crystal element supported on the color filter on the array substrate; and

electrodes operatively coupled to the liquid crystal element; and

control electronics operatively coupled to the liquid crystal display device, controlling the liquid crystal display device to display an image in accordance with display data.

Claim 13 (Currently amended): A process of fabricating a color filter on array substrate, comprising the steps of:

providing a first substrate;

forming an insulating layer on selected regions on the first substrate, the insulating layer having a reflective top surface; and

forming a color filter over the first substrate, including over the insulating layer at selected regions, wherein a thickness of the color filter at the selected regions is thinner than that at-beyond outside of the selected regions.

Claim 14 (Original): The process according to claim 13, wherein the insulating layer includes a reflective layer having a reflective top surface.

Claim 15 (Original): The process according to claim 13, wherein the insulating layer does not extend beyond the selected regions on the substrate, and the selected regions generally define reflective regions on the substrate and the regions outside the selected regions generally define transmissive regions on the substrate.

Claim 16 (Original): The process according to claim 13, wherein the insulating layer extends beyond the selected regions on the substrate, and the selected regions generally define

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reflective regions on the substrate and the regions outside the selected regions generally define transmissive regions on the substrate.

Claim 17 (Original): The process according to claim 13, further comprising the step of: forming a pixel electrode on the color filter.

Claim 18 (Currently amended): A process of fabricating a transflective liquid crystal display device, comprising the steps of:

forming a color filter on an array substrate, comprising the steps of:
providing a first substrate;
forming an insulating layer on selected regions on the first substrate, the insulating layer having a reflective top surface; and
forming a color filter over the first substrate, including over the insulating layer at selected regions, wherein a thickness of the color filter at the selected regions is thinner than that at beyond outside of the selected regions;
providing a liquid crystal element on the color filter on the array substrate; and
providing electrodes operatively coupled to the liquid crystal element.

Claim 19 (Original): The process according to claim 18, wherein the insulating layer includes a reflective layer having a reflective top surface.

Claim 20 (Original): The process according to claim 18, wherein the insulating layer does not extend beyond the selected regions on the first substrate, and the selected regions generally define reflective regions on the first substrate and the regions outside the selected regions generally define transmissive regions on the first substrate.

Claim 21 (Original): The process according to claim 18, wherein the insulating layer extends beyond the selected regions on the first substrate, and the selected regions generally define reflective regions on the first substrate and the regions outside the selected regions generally define transmissive regions on the first substrate.

Claim 22 (New): A transflective liquid crystal display device, comprising:

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a first substrate having a transmissive region and a reflective region;
an insulating layer formed over the first substrate in the reflective region and in the transmissive region;
a reflective layer formed on the insulating layer in the reflective region;
a color filter formed on the insulating layer and the reflective layer, wherein a thickness of the color filter in the reflective region is thinner than that in the transmissive region;
a pixel electrode formed on the color filter;
a second substrate opposite the first substrate;
a transparent electrode formed on the inner side of the second substrate; and
a liquid crystal layer interposed between the first substrate and the second substrate.

Claim 23 (New): The transreflective liquid crystal display device according to claim 22, wherein the ratio of the color filter thickness in the reflective region to that in the transmissive region is 1/1.2 to 1/2.

Claim 24 (New): The transreflective liquid crystal display device according to claim 22, wherein a first surface of the color filter is higher in the reflective region than in the transmissive region.

Claim 25 (New): The transreflective liquid crystal display device according to claim 24, wherein a second surface of the color filter is substantially the same height in the reflective region and in the transmissive region.

Claim 26 (New): The transreflective liquid crystal display device according to claim 25, wherein the insulating layer is thinner in the transmissive region than in the reflective region.

Claim 27 (New): The transreflective liquid crystal display device according to claim 22, wherein the ratio of the insulating layer thickness in the reflective region to that in the transmissive region is 2/1 to 10/1.

Claim 28 (New): The transreflective liquid crystal display device according to claim 22, wherein a surface of the color filter is substantially the same height in the reflective region and in the transmissive region.

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Claim 29 (New): The transflective liquid crystal display device according to claim 22, wherein the insulating layer is thinner in the transmissive region than in the reflective region.